



Interactive Highway Safety Design Model (IHSDM)

Getting Started Guide

Developed for
**Federal Highway Administration (FHWA)
Turner-Fairbank Highway Research Center (TFHRC)
6300 Georgetown Pike
McLean, VA 22101**

**IHSDM Version 2.05b
Public 2003 Release
March 7, 2003**

Disclaimer

This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its content or use thereof. This document does not constitute a standard, specification, or regulation.

The United States Government does not endorse products or manufacturers. Trade and manufacturers' names may appear in this document only because they are considered essential to the objective of the document.

Limited Warranty and Limitations of Remedies

This software product is provided "as-is," without warranty of any kind-either expressed or implied (but not limited to the implied warranties of merchantability and fitness for a particular purpose). The FHWA and distributor do not warrant that the functions contained in the software will meet the end-user's requirements or that the operation of the software will be uninterrupted and error-free.

Under no circumstances will the FHWA or the distributor be liable to the end-user for any damages or claimed lost profits, lost savings, or other incidental or consequential damages rising out of the use or inability to use the software (even if these organizations have been advised of the possibility of such damages), or for any claim by any other party.

Notice

The use and testing of the IHSDM software is being done strictly on a voluntary basis. In exchange for provision of IHSDM, the user agrees that the Federal Highway Administration (FHWA), U.S. Department of Transportation and any other agency of the Federal Government shall not be responsible for any errors, damage or other liability that may result from any and all use of the software, including installation and testing of the software. The user further agrees to hold the FHWA and the Federal Government harmless from any resulting liability. The user agrees that this hold harmless provision shall flow to any person to whom or any entity to which the user provides the IHSDM software. It is the user's full responsibility to inform any person to whom or any entity to which it provides the IHSDM software of this hold harmless provision.

Table of Contents

1. Introduction	1
1.1 Minimum System Configuration	1
1.2 Implementation Language	1
1.3 Distributions	1
2. Operational Environments	1
2.1 Directory Structure	1
2.2 IHSDM Data Organization Concepts	1
3. Installation	2
3.1 Stand-Alone Installation/Configuration	2
3.2 User Name/Directory Configuration	2
4. Configuration Parameters	3
4.1 Ancillary Program Configuration	3
4.2 Operational Configuration Options	4
4.3 Properties File	4
5. Modules and Utilities	4
5.1 Module and Utility Invocation	5
5.2 Using the Graphical User Interface	5
5.2.1 Windows	5
5.2.1.1 Application Windows	5
5.2.1.2 Dialog Windows	6
5.2.1.3 Status Window	6
5.2.1.4 GUI Properties	6
5.2.2 Widgets	6
5.2.3 Menus	6
6. Documentation	6
Index	10

List of Figures

Figure 1 User Documentation Map	9
---------------------------------------	---

1. Introduction

This document provides a basic overview of the Interactive Highway Safety Design Model (IHSDM) software installation and configuration. For a more detailed discussion, refer to the Installation Manual. The procedures to install, configure and invoke IHSDM are the same for all IHSDM distributions. The IHSDM distribution contains safety analysis and support software utilities. The current release of IHSDM includes:

- Policy Review Module (version 2.03c, Jan 08, 2003)
- Design Consistency Module (version 2.01d, Nov 15, 2002)
- Crash Prediction Module (version 1.00e, Dec 13, 2002)
- Traffic Analysis Module (version 1.00a, Mar 07, 2003)
- Intersection Review Module (version 1.00a, Mar 07, 2003)
- Configuration Tool (version 1.06b, Jul 30, 2001)
- Administration Tool (version 1.00h, Aug 23, 2002)
- Basic Services (version 2.05b, Mar 07, 2003)

This software is under active development. The use and testing of the IHSDM software is being done strictly on a voluntary basis. In exchange for provision of IHSDM, the user agrees that the Federal Highway Administration (FHWA), U.S. Department of Transportation and any other agency of the Federal Government shall not be responsible for any errors, damage or other liability that may result from any and all use of the software, including installation and testing of the software. The user further agrees to hold the FHWA and the Federal Government harmless from any resulting liability. The user agrees that this hold harmless provision shall flow to any person to whom or any entity to which the user provides the IHSDM software. It is the user's full responsibility to inform any person to whom or any entity to which the user provides the IHSDM software of this hold harmless provision.

1.1 Minimum System Configuration

For details on the minimum system requirements, refer to the Install Manual, Minimum System Requirements in the Installation Manual .

1.2 Implementation Language

For details on the implementation language, refer to the Install Manual, Implementation Language in the Installation Manual .

1.3 Distributions

For details on the software distribution, refer to the Install Manual, Distributions in the Installation Manual .

2. Operational Environments

For details on the operational environments, refer to the Install Manual, Operational Environments in the Installation Manual .

2.1 Directory Structure

For details on the directory structure, refer to the Install Manual, Directory Structure in the Installation Manual .

2.2 IHSDM Data Organization Concepts

For detailed information on how the data is organized in the IHSDM (users, projects, and analyses) and how external two-lane rural highway data interacts with these data organization levels refer to the IHSDM Data Organization Concepts in the Running IHSDM Software Manual.

3. Installation

Before proceeding with the actual configuration, you need to determine which operational environment you plan to support with the installation. If you are configuring a *stand-alone* environment, refer to the next section. If you are configuring a *server* or *hybrid* operational environment, refer to the Install Manual, Software Installation in the Installation Manual .

3.1 Stand-Alone Installation/Configuration

The basic steps in the IHSDM configuration procedure for a *stand-alone* IHSDM operational environment are:

1. Identify and create the IHSDM system home directory. This directory should be created on a drive with 120 MBs of free disk space.
2. Execute the self-extracting distribution installation archive (e.g., **BETA_200_EXE.EXE**) and specify the IHSDM system home directory as the install directory.
3. If the file extraction is successful, the installation utility creates an IHSDM menu in the Windows *Start Programs* menu. The *IHSDM Configuration Utility* may be run as the last step of the installation process or it may be run from the IHSDM menu.

The *IHSDM Configuration Utility* is setup as a wizard. The wizard allows you to specify either a **stand-alone** (single workstation) or **server** (for server/hybrid server operations) operational environment. Specify an operational mode of **stand-alone** in the wizard.

The *IHSDM Configuration Utility* presents other wizard panels that allow the specification of user name/directories, default executable paths (for a word-processor, spreadsheet, text editor and HTML browser) and some operational configuration parameters.

4. Once IHSDM has been configured, the IHSDM application may be invoked from the desktop shortcut or from the IHSDM menu in the Windows Start Programs menu (see Launching IHSDM for more options).

3.2 User Name/Directory Configuration

IHSDM is designed such that the highest level of data organization is referred to as the *user* level. In many user organizations, the *user* level will correspond to an individual user of IHSDM. However, this level can also be associated with a work group, or any other top level organization category of workflow.

In a networked Windows environment, the default user identifier is the network login identifier. The Configuration Utility is used to specify the category of *user login* that is used when the system starts. The Configuration Utility uses a configuration flag to specify the access control used by IHSDM, based on the user identifier.

An identifier for each potential *user* of IHSDM can be entered during system configuration. Associated with each user identifier (*IHSDM User ID*) is a user home directory. If the user home directory does not exist at the first invocation of IHSDM, the system will query as to its creation.

Adding user identifiers to the IHSDM system is performed in the *Configuration Utility*. The *Configuration Utility* can be found in the *Start Programs* menu. New users can be added by selecting the **Add** button on the Users wizard panel. Selecting the **Add** button displays the Add/Edit an IHSDM User Definition dialog.

4. Configuration Parameters

A number of parameters are set by the IHSDM *Configuration Utility* to provide defaults for user properties. Other parameters are set to specify the basic operation characteristic of IHSDM for all users. All of these parameters are ultimately maintained in IHSDM properties files.

4.1 Ancillary Program Configuration

IHSDM is designed to use several ancillary programs that are commonly found on workstation class computers. Rather than require that specific programs be used, IHSDM is designed to interact with these programs through general, industry standard interfaces. The interface requirements of the ancillary programs and their function with IHSDM are discussed below.

- **Word Processor** The *word processor* must be capable of reading and writing an ASCII-based text file format. Currently, both the Rich Text Format (RTF) and the HyperText Markup Language (HTML) are supported. Examples of a compatible word processor in the Windows environment are *Microsoft Word* and *Corel WordPerfect*.

The word processor can be used as:

- a viewer for analysis reports, and
- an editor for problem reports.

- **Spreadsheet** The *spreadsheet program* must be capable of reading CSV (comma separated) text files. Examples of compatible spreadsheet program in the Windows environment are *Microsoft Excel* and *Corel Quattro*.

The *spreadsheet program* can be used as:

- a viewer for tabular numerical output from several program.

- **Text Editor** The *text editor* is any basic editor that can read and write simple ASCII text files. Examples of a compatible text editor in the Windows environment are *NotePad* and *WordPad*.

The text editor can be used as:

- a viewer for some Help displays,
- a viewer for analysis reports, and
- an editor for problem reports.

- **HTML Browser** The *HTML browser* must be capable of reading HTML version 3 files. A browser that supports tables and frames is strongly recommended. Examples of compatible browsers in the Windows environment are *Microsoft Internet Explorer*, *Netscape Navigator* and *Mozilla*. The *browser* can be used as a viewer for analysis reports.

The *browser* must be used as:

- a viewer for analysis summaries, and
- a viewer for most of the system help.

The full path name of the standard tool executables may be set as part of the configuration process on the Executables Configuration wizard panel of the *Configuration Utility*. IHSDM will

attempt to locate these tools by looking in standard directories. The user can override each of the system configuration paths.

4.2 Operational Configuration Options

There are several operational configuration parameters that are set or defaulted on an installation-wide basis. These configuration parameters are:

- **Project Unit System** The default system of units used when new IHSDM projects are created. Currently supported values are `User Default`, `Metric` and `English`.
- **User Login Mode** Specifies whether a user login dialog is presented when IHSDM is invoked, and whether a user must login with a known user identifier to gain access to IHSDM.

Four login modes are currently supported:

- `none` No login dialog is displayed, the user identifier is obtained from the operating system, the user identifier need not exist to access IHSDM. The user home directory will be as specified for known users, and the starting directory for unknown users.
 - `default` A login dialog is displayed with the default identifier obtained from the operating system. The user identifier need not exist to access IHSDM. The user home directory will be as specified for known users, and the starting directory for unknown users.
 - `exist` The default login identifier is obtained from the operating system. If the default identifier is a known user, no login dialog is displayed. If the default identifier is not a known user, a login dialog is displayed. The user identifier must be known to access IHSDM. The user home directory will be as specified for the user identifier.
 - `require` The login dialog is displayed. The login identifier must be known to access IHSDM. The user home directory will be as specified for the user identifier.
- **Highway Data Location** Specifies the location used to maintain the highway data. Values for this parameter are `server` (store the data in an IHSDM system home subdirectory), `user` (the data in the user's home directory), and `project` (store the data in the project directory).
 - **Enable File Sharing** Enables IHSDM file (data) sharing. File sharing should be enabled if more than one user simultaneously work on the same project. There is a performance penalty for sharing, thus, sharing should be disabled if it is not needed. Values for this parameter are `yes` (enable sharing) and `no` (disable sharing).

Modifying any of the above options is performed in the *Configuration Utility* on the Configuration Options wizard panel. The *Configuration Utility* can be found in the *Start Programs* menu.

4.3 Properties File

When the IHSDM Configuration Utility is completed, the home directory contains a system properties file named **ihsdm.props**. The properties file is read each time any IHSDM module is executed. The file may be edited with any plain text editor such as *NotePad*. If it becomes necessary to re-configure IHSDM from scratch, the properties file may be deleted. If this occurs when the **IHSDM.EXE** executable is invoked, it will begin with the configuration utility and recreate the properties file.

5. Modules and Utilities

The IHSDM system includes safety analysis modules and system support utilities. These modules and utilities share a command invocation framework and graphical user interface.

5.1 Module and Utility Invocation

When the IHSDM installation is completed, the utility creates a menu for IHSDM in the Windows *Start Programs* menu. A desktop shortcut is also created for the IHSDM master program. The IHSDM menu includes the following entries:

- *Administration Tool* - This menu item runs the *IHSDM Administration Tool*.
- *Configure IHSDM* - This menu item runs the *IHSDM Configuration Utility*.
- *IHSDM Documentation* - This menu item runs the IHSDM documentation.
- *IHSDM License* - This menu item launches the Windows text editor and displays the IHSDM license information.
- *Release Notes* - This menu item launches the Windows text editor and displays the IHSDM release notes.
- *Run IHSDM* - This menu item runs the IHSDM master program.
- *Uninstall IHSDM* - This menu item runs the IHSDM uninstall utility.

The IHSDM system home directory also contains the `IHSDM.EXE` executable, which can be used to run the IHSDM master program. Likewise, the `PRM.EXE` executable may be used to run the stand-alone Policy Review Module, the `DCM.EXE` executable may be used to run the stand-alone Design Consistency Module, and the `CPM.EXE` executable may be used to run the stand-alone Crash Prediction Module.

5.2 Using the Graphical User Interface

This section provides a high-level introduction to using the various features of the IHSDM graphical user interface (GUI).

Each IHSDM application has a primary window-based interface referred to as the application window. All applications use a set of dialog windows to solicit control options and communicate results with the user. An optional status window provides a log of the application session status. A number of options are supported to tailor the look and feel of the GUI to the user's personal preferences.

The application window and all dialog windows are composed of a set of widgets and/or menus. The widgets and menus are used to specify data and control the operations of the application. Although a number of different types of widgets are available in IHSDM, they all share a number of operational characteristics.

5.2.1 Windows

The following sections discuss features found in the application windows, dialog windows, and the status window.

5.2.1.1 Application Windows

The **primary** application window controls the IHSDM session. It is displayed throughout the entire session. The application window contains an application menu and various widgets. To launch an application refer to *Launching IHSDM* for details. The list of main applications and their primary window includes:

- **IHSDM** - Launched via **ihsdm.exe**, the Master Control Module window is the primary application window.
- **Configure** - Launched via **configure.exe**, the Configuration Utility window is the primary application window.
- **Administration** - Launched via **admin.exe**, the System Administration Utility window is the primary application window.

Note: Two primary applications from the same distribution cannot be executed at the same time. Examples of secondary application windows include the Edit/View Highway Data window, the Highway Viewer window and the Data Graph window.

5.2.1.2 Dialog Windows

Dialog windows contain widgets used to manipulate a specific set of information. They generally do not contain menus. Dialog windows must be closed before the executing application can proceed.

Dialog windows are usually launched via widgets found in other dialog windows or via menu items found in the application window.

5.2.1.3 Status Window

The status window is attached to the executing application window. It displays a log of the application session's status. Displaying the status window is optional and can be modified by changing the user properties, refer to Properties, Display tab.

5.2.1.4 GUI Properties

A number of the properties of the application, dialog and status windows may be specified by the user. These properties include the color, font and use of icons/tooltips. The window properties are specified as part of the general user properties dialog. This dialog is accessed from the Edit|Edit User Properties application menu item or the Edit IHSDM User Properties toolbar button. The various window properties options are contained under the Properties, Display tab.

Note: Most changes to the window properties will not take effect until the next time an IHSDM application is invoked.

5.2.2 Widgets

Two general categories of widgets are available in the IHSDM: data entry widgets that solicit input values, and action widgets that invoke actions. Data entry widgets include Text Field Widgets, Text Area Widgets, Text with Button Widgets, Check Box Widgets, Combo Box Widgets, Text Slider Widgets, List Box Widgets, Station List Box Widgets, text selector, file chooser, and color selector. Action widgets include Toolbar Button Widgets, link area, Simple Button Widgets, Radio Button Widgets, and Popup Button Widgets. For detailed description of each individual widget, see the corresponding section of the User's Manual.

5.2.3 Menus

Two categories of menus are available in the IHSDM, the application menu, and popup menu. The application menu only resides on the menu bar of the application window. A popup menu can occur on any application window or dialog window.

6. Documentation

This document is available in three formats:

- a simple ASCII text formatted file named `README` in the IHSDM system home directory,
- a printable Adobe Portable Document Format (PDF) formatted file named `getstarted.pdf` in the `pdf` subdirectory of the IHSDM system home directory, and
- a HTML document named `getstarted.html` in the `html/user` subdirectory of the IHSDM system home directory.

The file `index.html` in the IHSDM system home directory is a top-level HTML document with links to the primary IHSDM HTML-based documentation. Several of the IHSDM documents listed in the following section are also available as PDF formatted documents in the `pdf` subdirectory of the IHSDM system home directory.

IHSDM documentation is organized in a series of manuals oriented to specific user types and information needs. User types include first-time users, regular users, and system administrators. Information needs include: installing and configuring IHSDM, the mechanics of using the various features of the software, engineering insights to ensure appropriate use of the software and interpretation of outputs, and administering and maintaining the software installation.

The structure of the series of manuals is illustrated in the User Documentation Map. The manuals are listed and described below by the users and information needs they support:

- **Manuals for First-Time Users:** These manuals are oriented to assist new users in installing and configuring IHSDM and running it for the first time. Manuals include:
 - **Getting Started Guide** - An overview of the installation and use of IHSDM. This Guide should be sufficient for stand-alone installations. For client-server installations, the more detailed IHSDM Installation Manual will be needed.
 - **Installation Manual** - A detailed reference to the installation and configuration of IHSDM.
 - **Running IHSDM Software Manual** - An overview of the basic operations in running the IHSDM software. The intent is to provide new users the information they need to run IHSDM for the first time.
- **User's Manuals:** These Manuals are intended as references that regular users can consult when issues arise about the mechanics of using the IHSDM graphical user interface. Manuals include:
 - **IHSDM User's Manual** - A reference for using the primary IHSDM graphical user interface. Other User's Manuals provide additional details on specific components of the IHSDM graphical user interface:
 - **Policy Review Module (PRM) User's Manual** - A reference for using the (stand-alone) Policy Review Module software graphical user interface.
 - **Crash Prediction Module (CPM) User's Manual** - A reference for using the (stand-alone) Crash Prediction Module software graphical user interface.
 - **Design Consistency Module (DCM) User's Manual** - A reference for using the (stand-alone) Design Consistency Module software graphical user interface.
 - **Intersection Review Module (IRM) User's Manual** - A reference for using the (stand-alone) Intersection Review Module software graphical user interface.

- Traffic Analysis Module (TAM) User's Manual - A reference for using the (stand-alone) Traffic Analysis Module software graphical user interface.
 - Using the IHSDM Graphical User Interface - A reference for the operation of the individual components of the graphical user interface.
 - User Properties and Defaults Manual - A reference for editing IHSDM system properties, user properties, and user default values.
- Frequently Asked Questions - A list of frequently asked questions related to the IHSDM software.
- IHSDM Troubleshooting Guide - A reference for troubleshooting IHSDM software problems.
- Documentation of IHSDM Data: These documents provide detailed descriptions of all IHSDM data elements and references for importing and editing data.
 - IHSDM Highway Model - A reference for the IHSDM highway model, including descriptions of the data elements comprising the model.
 - LandXML Support - A reference for IHSDM support for the LandXML data standard.
 - Editing Highway Elements - A reference for using the Edit/View Highway Elements graphical user interface.
 - GEOPAK-TO-IHSDM Application Programmer's Interface (API) User's Manual - A reference for using the Application Program Interface (API) to export data from GEOPAK into a format that IHSDM can import.
- Engineer's Manual: The intent of these Manuals is to provide the engineering information necessary to make appropriate use of IHSDM evaluation capabilities and interpretation of results. Manuals include:
 - Policy Review Module (PRM) Engineer's Manual - A reference for the engineering issues of using the Policy Review Module.
 - Crash Prediction Module (CPM) Engineer's Manual - A reference for the engineering issues of using the Crash Prediction Module.
 - Design Consistency Module (DCM) Engineer's Manual - A reference for the engineering issues of using the Design Consistency Module.
 - Intersection Review Module (IRM) Engineer's Manual - A reference for the engineering issues of using the Intersection Review Module.
 - **Intersection Policy Review Sub-Manual** - Describes the procedures for checking an intersection design element against relevant policy, including references to the section of the AASHTO policy that contains the information used to develop the module and check the design. **(The Intersection Policy Review Sub-Manual is not available in the current release of IHSDM.)**
 - Intersection Diagnostic Review Engineer's Sub-manual - Describes in detail the concerns that the diagnostic review component considers and the models used to evaluate those concerns.
 - Traffic Analysis Module (TAM) Engineer's Manual - A reference for the engineering issues of using the Traffic Analysis Module.

- **Manuals for System Administrators:** These Manuals provide system administrators the information they need to maintain IHSDM installations.
 - **System Administrator's Manual** - A reference for using the IHSDM Administration Tool software graphical user interface. This manual also discusses customizing variable components of IHSDM, including analysis report templates, data dictionaries, and policy files.
 - **PRM/IRM Policy Table Maintenance** - A reference for editing design policy tables used in the Policy Review Module and Intersection Review Module.

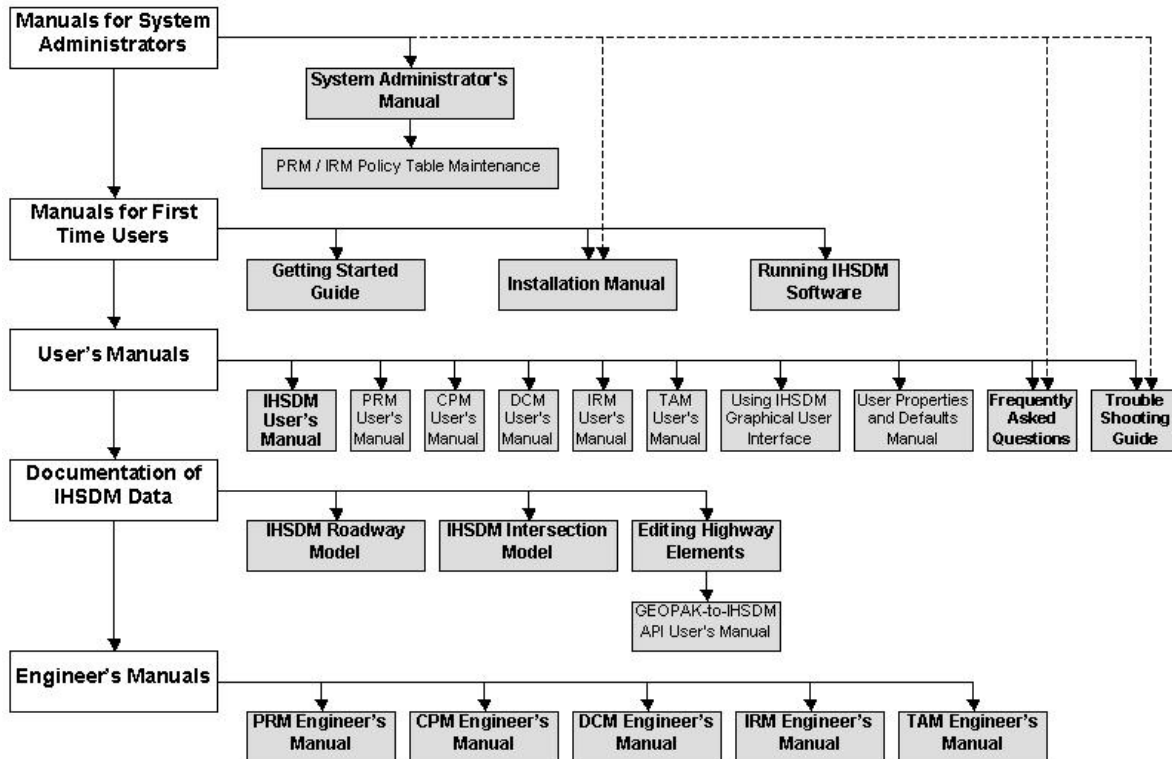


Figure 1 User Documentation Map

Index

A

application
window, 5

B

BETA_200_EXE.EXE
command, 2, 2

browser
configuration, 3
HTML, 3
requirements, 3
software, 2, 2

C

command
BETA_200_EXE.EXE, 2, 2
CPM.EXE, 5
DCM.EXE, 5
IHSDM, 2
IHSDM.EXE, 5
PRM.EXE, 5

configuration
browser, 3
directory, 2
executable path, 3
file sharing, 4
highway data location, 4
minimum, 1
operational, 4
parameters, 3
spreadsheet, 3
stand-alone, 2
text editor, 3
units of measure, 4
user login, 4
word processor, 3

CPM.EXE
command, 5

CSV
file formats, 3

D

data organization, 2

DCM.EXE
command, 5

developer
software, 1

dialog
window, 6

directory
configuration, 2
IHSDM, 1
project, 1
structure, 1
system, 1, 2, 2
user, 1, 2

distributions, 1

documentation
HTML, 7

E

editor
See text editor

Executable
Requirement, 3

executable path
configuration, 3

F

file
properties, 4

file formats
CSV, 3
HTML, 3
RTF, 3

file sharing
configuration, 4

G

graphical user interface, 5
properties, 6

GUI
See graphical user interface

H

hardware
requirements, 1

highway data location
configuration, 4

HTML

- browser, 3
- documentation, 7
- file formats, 3
- word processor support, 3

hypertext markup Language

See HTML

I**identification**

- user, 4

IHSDM

- command, 2
- directory, 1

IHSDM.EXE

- command, 5

implemetation language, 1**install**

- stand-alone, 2

installation, 2**invocation**

- module, 5

M**menu, 6****minimum**

- configuration, 1

module

- invocation, 5
- version, 1

O**operational**

- configuration, 4

operational environment, 1**P****parameters**

- configuration, 3

PDF

See file formats

portable document format

See PDF

PRM.EXE

- command, 5

project

- directory, 1

properties

- file, 4
- graphical user interface, 6

R**README file, 7****Requirement**

- Executable, 3

requirements

- browser, 3
- hardware, 1
- software, 1
- spreadsheet, 3
- text editor, 3
- word processor, 3

Rich Text Format

See RTF

RTF

- file formats, 3
- word processor support, 3

S**software**

- browser, 2, 2
- developer, 1
- requirements, 1

spreadsheet

- configuration, 3
- requirements, 3

stand-alone

- configuration, 2
- install, 2

status

- window, 6

structure

- directory, 1

system

- directory, 1, 2, 2

T**text editor**

- configuration, 3
- requirements, 3

U

units of measure
 configuration, 4

user
 directory, 1, 2
 identification, 4

user login
 configuration, 4

V

version
 module, 1

W

widget, 6

window, 5
 application, 5
 dialog, 6
 status, 6

word processor
 configuration, 3
 requirements, 3

word processor support
 HTML, 3
 RTF, 3